

### ABSTRACT

The invention relates to measuring the concentration of analytes with the aid of an oxidase in an immersion sensor situated in a fluid or in a matrix containing fluid. Oxygen diffuses into the enzyme layer from within, from a gas-filled space connected to the atmosphere and/or to an oxygen reservoir. This enables oxygen saturation of the oxidase in a low-oxygen or oxygen-free medium and/or at high analyte concentrations. The analyte diffuses into the enzyme layer in a channel or a number of channels which contain(s) water and limit(s) diffusion, wherein the channel/channels on the surface of the sensor is/are filled with a protein-impermeable, hydrophilic matrix. By increasing the channel cross-section on the surface of the sensor and/or by connecting the channel/channels to a protein-impermeable, porous, hydrophilic layer on the surface of the sensor, the effect of outer deposits on the diffusion resistance of the analyte is reduced.